

KNOWLEDGE

VOL 3 AUGUST 2009

OFFICIAL SAFETY MAGAZINE OF THE U.S. ARMY

KEEPING YOUR HEAD

» **THE GREAT MENACE** p. 10

» **IF YOU DIDN'T DROP IT ...** p. 22

» **COMPLACENCY CAN HURT** p. 34

**DYING
TO FINISH** p. 3



ARMY STRONG



<https://safety.army.mil>

**ARMY SAFE
IS ARMY STRONG**



**BAND OF BROTHERS
& SISTERS**

KNOWLEDGE

OFFICIAL SAFETY MAGAZINE OF THE U.S. ARMY

contents

2 From the DASAF

4 Keeping Your Head

8 Dying to Finish

12 TSAS: Workload Reduction via the Sense of Touch

14 Hit the Road

10 THE GREAT MENACE

16 Tired and True

18 Good Judgment Will Keep You Alive

24 Nowhere to Go

22 IF YOU DIDN'T DROP IT ...

28 Keep the Lines in Mind

32 Don't Just Check the Block

36 Accident Briefs

Plus: pull-out posters

COMPLACENCY CAN HURT



U.S. ARMY COMBAT READINESS/SAFETY CENTER
<https://safety.army.mil>

Brig. Gen. William T. Wolf, Commander/Deputy Chief of Army Safety
James Yantis, Director, Strategic Communication

Chris Frazier, Managing Editor
Bob Van Esberg, Editor
Paula Allman, Editor

Bloke Grantham, Graphic Design
Taryn Gillespie, Graphic Design
Leslie Cox, Graphic Design (Webster)
Karmi Lisenby, Graphic Design (Webster)

Mission statement: USACRC supports our Army by collecting, storing, analyzing, and disseminating actionable information to assist Leaders, Soldiers, Families, and Civilians in preserving/protecting our Army's combat resources.

We welcome your feedback. Please e-mail comments to safe.knowledge@conus.army.mil.

Knowledge is published monthly by the U.S. Army Combat Readiness/Safety Center, Bldg. 4905, 5th Ave., Fort Rucker, AL 36362-5363. Address questions regarding content to the managing editor at (334) 255-2267. To submit an article for publication, e-mail safe.knowledge@conus.army.mil or fax (334) 255-9044. We reserve the right to edit all manuscripts. Address questions concerning distribution to (334) 255-2062. Visit our Web site at <https://safety.army.mil>.

Knowledge provides a forum for Soldiers, Leaders and safety professionals to share best practices and lessons learned and

maintain safety awareness. The views expressed in these articles are those of the author and do not necessarily reflect the official policy or position of the U.S. Army. Department of Defense or the U.S. Government. Contents are specifically for accident prevention purposes only. Photos and artwork are representative and do not necessarily show the people or equipment discussed. Reference to commercial products does not imply Army endorsement. Unless otherwise stated, material in this magazine may be reprinted without permission, please credit the magazine and author.



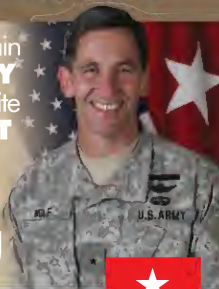
SAFETY IS EVERYONE

A few months ago, the U.S. Army Combat Readiness/Safety Center entered the social networking and media arena, establishing profiles on Facebook, YouTube, Vimeo and Twitter in order to embrace an active online community. Periodically, I spend some time on these sites, reading what our "fans" in the field are discussing when it comes to Army safety.

I've found that our Soldiers, civilians and their Family members are openly sharing their personal beliefs and values on a host of subjects. There was, however, one theme that kept reappearing throughout several postings and comments. That theme was individual responsibility.

A recent message posted on our Facebook page caused me to pause and consider the great insight offered by one of our troops in the field. He wrote, "Individuals have to know that they are owners of their own safety."

“CONTINUE to remain vigilant about **SAFETY** and **APPLY** composite risk **MANAGEMENT** to all **YOUR** daily **ACTIVITIES**, both **ON** and **OFF** the **BATTLEFIELD.**”



ONE'S BUSINESS



In another recent Facebook posting, a former company commander commented on the issue of personal responsibility, noting, “Regardless of the programs we implement, the safety briefings we present or vignettes we tell, the individual Soldier is the only one who can either embrace that information or toss it out.”

Every year, the USACR/Safety Center team publishes numerous tools and programs to help keep our Army safe. But these products are of no value if they are not embraced and used by the individual Soldier as part of everyday life.

We all must embrace Army safety and use the tools, programs and lessons learned to protect our most vital resource — our Soldiers — both on and off duty, in combat or home station and off-duty with Family and friends. The five steps of the composite

risk management process must be at the heart of every Soldier’s “plan,” whether that plan is taking them to a local beach or their hometown thousands of miles away.

Though individual responsibility is, by definition, focused on the individual, it also reaps rewards for our entire Army Family. Engaged Leaders who use all the tools available to identify and mitigate risk do make a difference. Likewise, Soldiers and Family members who embrace safety are also a critical component of protecting our Band of Brothers and Sisters.

This team approach to safety is especially important during the high-risk summer season. Tragically, our Army continues to experience an increase in off-duty accidental fatalities during this timeframe. The USACR/Safety Center recently developed the Safe Summer campaign and Off-Duty


Safety Awareness Program to ensure Leaders, Soldiers and Families are aware of the off-duty hazards they will face in the upcoming months. You can find these products on our Web site at <https://safety.army.mil>.

I encourage you to remain focused on reducing preventable losses and conserving our combat force. Continue to remain vigilant about safety and apply composite risk management to all your daily activities, both on and off the battlefield. I thank you for all you do for our nation and for making safety a top priority in all your activities.

Army Safe Is Army Strong!«

WILLIAM T. WOLF
Brigadier General, USA
Director of Army Safety

K E E



A motorcycle helmet is not a novelty; it's a serious piece of safety gear that should be carefully selected and maintained. While manufacturers strive to make helmets stylish and flashy, the primary concern is the protection they provide. It doesn't matter whether you've always worn a helmet or if wearing one is new to you. Here are some helmet basics you need to know for your safety and comfort on the road.

The Components

While there are many different helmet styles to choose from, all have four major components: a rigid outer shell, an expanded polystyrene (EPS) impact-absorbing liner, padding for fit and comfort and a retention system. Your helmet,

PROTECTING YOUR HEAD

CHIEF WARRANT OFFICER S. ROBERT B. REYNOLDS
U.S. Army Central Command Safety Office
Fort McPherson, Ga.

at a minimum, should meet Department of Transportation (DOT) requirements.

Shell Construction

Helmets typically offer one of three types of outer shell construction: thermoplastic, fiberglass or carbon fiber. Each has different qualities worth examining.

- Thermoplastic shells are a single-layer, injection-molded material. Due to its single-layer construction, a thermoplastic helmet requires a larger inner impact liner. This, in turn, increases the shell size and weight.

- Fiberglass shells are generally stronger than thermoplastic shells because they are made of multiple layers of fiber cloth combined with multiple layers of resin. The strength of the fiberglass weave permits the use of a smaller inner liner, allowing fiberglass shells to be lighter and more compact than thermoplastic shells.

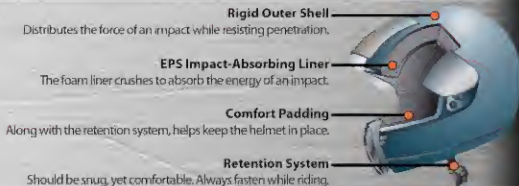
- Carbon fiber helmets are made of multiple layers of extremely strong, carbonized Kevlar fibers along with multiple layers of resin. Due to the inherent strength of both carbon and Kevlar, less material is needed to achieve maximum

strength and durability. As a result, carbon fiber helmets are significantly lighter than comparable thermoplastic or fiberglass shells.

Helmet Styles

While there are a variety of helmet designs to fit the tastes of different riders,

for full-face exposure when riders are stopped and need extra ventilation for cooling. Riders should always ride with the module in the closed position. For an example of how a modular helmet helped save a rider's life, see the story "Riding to Live" in the May 2009 issue of Knowledge.



the best ones protect both the head and the face.

- Full-face helmets provide optimum face and head protection. Equipped with flip-up face shields and flow-through ventilation, they can be warm in the winter and comfortable in warm weather.

- Modular helmets combine the benefits of full-face and three-quarter helmets. Flipping up the face/chin module makes these helmets easier to put on and take off and allows

- Three-quarter open-face helmets don't offer the face and chin protection of full-face helmets. If you use an open-face helmet, you should have a snap-on face shield in place when you ride, or buy a pair of goggles that can withstand the impact of stones and other debris. Prescription eyeglasses or sunglasses do not provide sufficient protection.

- "Shorty" half-helmets protect even less of your head and are more likely to

come off upon impact. These helmets are not recommended.

Does It Fit?

Ensuring your helmet fits properly is vital to its performance and effectiveness. Here are a few tips to help you get the right fit.

- Measure the width of your head by placing a standard tape measure approximately 1 inch above your eyebrows. This will give you a starting point in selecting the proper-size helmet. The following link will provide you a measuring tape with gradations showing the suggested helmet size: <http://www.motorhelmets.com/htm-service/sizingchart-measuringtape.htm>.

- Put on the helmet by grasping the chin strap in each hand and



pulling it over your ears until you feel the inner lining touch the top of your head. If the helmet feels too tight — for example, you cannot pull the helmet down over your ears or the helmet is painful — try the next larger size.

- Ensure the helmet is not too loose. Properly secure the chin strap and then grasp the chin bar and try to move the helmet up and down and side to side. If the helmet slides on top of your skin and hair, then it is too loose. If your hair and skin move with the helmet, then it is properly snug. Also, try rolling the helmet

forward and backward to ensure it does not slide off your head.

- Wear the helmet for at least 15 minutes before buying it to ensure there are no uncomfortable pressure points. If you do encounter pressure points, try the next larger size.

- If you typically wear eyeglasses or sunglasses, bring them along to ensure they will fit inside the helmet without causing pressure points at your ears and the bridge of your nose.

Here are some tips to maximize the life and effectiveness of your helmet:

- Follow the manufacturer's instructions on helmet care.

- Never expose a helmet to chemicals or excessive heat. These may degrade the protective properties, even if the damage is not visible.

- Never hang a helmet on a motorcycle's mirror, turn signal or sissy bar. The EPS impact-absorbing liner can be easily damaged.

- Before riding, ensure chin straps are tightened properly and not frayed. Also ensure the visor locking mechanism and face shield are tightly affixed.

- If you are in an accident and your helmet suffers an impact, replace it immediately. Impacts may fracture the outer shell or compress the impact-absorbing liner, causing damage that may not be immediately visible.

- Manufacturers recommend that helmets be replaced every three to five years, depending on use. Glues, resins and other helmet materials break down over time and hair oils, sweat, cosmetics — even the sun's UV rays — can add to helmet deterioration.

Keep It Clean

- Use mild soap and water to wash the outer shell. Clean

the face shield with warm water and a soft, lint-free cloth.

- Avoid using a dry cloth, as it may scratch the shield.

- Hand wash all internal liners with mild soap and allow to air dry.

- Use compressed air to clear helmet air vents and channels.

- Do not use solvents or chemicals to clean any part of the



“While **MANUFACTURERS** strive to make helmets **STYLISH** and **FLASHY**, the primary **CONCERN** is the **PROTECTION** they **PROVIDE**. It doesn't **MATTER** whether you've **ALWAYS** worn a **HELMET** or if **WEARING** one is **NEW** to **YOU**.”

helmet or shield, as they can destroy protective coatings and compromise the helmet's structural integrity.◀

Editor's note: Material for this article was derived from MotorHelmets, available online at <http://www.motorhelmets.com/> and from the Motorcycle Safety Foundation.

**Share street smarts
while helping your
battle buddy!**



MMP

MOTORCYCLE MENTORSHIP PROGRAM

**Mentoring can be fun and set up
in various ways.**

- Unit-level one-on-one mentorship
- Unit-level riding groups
- Private organization
- Combination unit program and private organization at the installation level
- Non-appropriated fund instrumentality

**Check out the MMP Web site for some
examples of active mentoring programs:
<https://safety.army.mil/mmp/>**

Dying to Fin

MAJ. ANNA HABERZETTL
U.S. Army Combat Readiness/Safety Center
Fort Rucker, Ala.

It takes months of preparation and untold amounts of mental and physical strength to reach your personal best. It only takes a change in the weather to throw all that out the window. Or does it?

How do you set yourself up for success when you're at the mercy of Mother Nature? I'm talking about training for individual competitions. Whether it's bodybuilding, running, swimming, biking or racing enduro, prepare your body for the worst and hopefully you'll be pleasantly surprised by the not-too-bad.

This past winter/spring, I spent 13 weeks finessing my meal plan

and workouts for a half marathon in which I planned to run my personal best. Counting reps, miles, gallons of water, as well as grams of protein, carbohydrates and fat, absorbed a good portion of my day. I was so focused. I researched average temps on race day and even trained in the heat a few weeks before the event.

Finally, it was race day. As my friend and I stretched in a tree-covered area and waited in the

endless "blue canoe" lines, the shade and breeze made it seem a little chilly — my preferred running climate. The race started at 7 a.m. in two-minute waves, and we didn't get to the start line until 7:30 a.m. with thousands of runners in front of us. By then, the breeze was gone and the temperature was already in the 80s, topping the record high for this race by almost 14 F (and about 15 F hotter than when I



ish

ran this race five years earlier, which was just seven months after having my second child).

By mile two, people were walking. Water and drink stands were being replenished like crazy as runners grabbed any type of hydration they could find. I kept my mind occupied by listening to the bands that played on the side of the road, but I could tell my pace was way off and wasn't getting any faster. When I hit mile 10, I knew the last five kilometers were going to take a lot longer than they should.

The heat was brutal. Competitors were laid out on the roadsides, sidewalks and on lawns. Ironically, there were T-shirts at the previous day's expo printed with "If found on roadside, drag to finish line."

So, after driving six hours the day before and knowing I had six more hours ahead of me that afternoon, not getting a personal record was

kind of a bummer. I tried to figure out what I learned from this experience and could only come up with "train smarter." I was probably in the best shape of my life, but I lacked a hydration plan. That ultimately crushed me and my hopes to run a great time.

How can I prevent this from happening again? I must simply "worst case" the event, research and prepare. I could not induce rain on my runs, but I ran in the rain, cold and heat when those opportunities presented themselves.

You might be wondering what kind of dementia I am suffering from, but just ask any avid runner and the answer will probably be very similar. What I didn't do was read more about how much water I needed. You have to practice like you fight. I didn't drink on practice runs, so, come race day, I didn't want to choke on water while trying to maintain a pace.

By the time you're thirsty, though, it's usually too late. The salt is caking on your face and extremities and you have to wait another mile or so for another water stop. I wasn't having fun between miles 10 and 13; rather, I was just looking for the next cup of water that I could sip and pour over my head. How much did I pay to do this?

On the other hand, other runners cruised to the finish. They had properly prepared and maybe even read the Web site and pamphlet tips on hydrating. By the next race, I will have forgotten about the pain. I will look at the finisher medal and remember the most important lesson I learned that day — hydrate or die.◀

HOW TO HYDRATE TO SUCCESS

1. Educate yourself. Race Web sites have helpful hints such as historic temperatures, health and medical advice, medical assistance plans and hydration point locations. Also, the bigger races assemble detailed information packets which usually include pamphlets on medical information, medications and training. If there is room or a format on the back of your race bib for medical information and points of contact, ensure you fill it out.

2. Have a plan. Backward plan from race day and set obtainable goals. Is this the first time you are competing at this sport or level? Does your training program and fitness level match up and do they progress together?

3. Incorporate your hydration plan into your training at the onset. We're talking water, electrolyte replacement, carbohydrates and salt. Are you tracking fluid loss, sweat rate and core body temp? Drinking too much can sometimes be worse than not drinking enough. Are you taking medications or supplements? Set up water points in safe locations along a long training run and practice drinking. It's harder than you think to gulp and maintain a decent pace. The drink/rest cycle the Army advocates may not be enough for your event.

4. Find a running partner as insane as you and work out with him or her. You'll see in your partner certain symptoms you cannot

see in yourself. Plus, it's motivational and may "guilt" you into that session you would have slept through.

5. Have fun with it. I keep a gallon water jug on my desk to motivate me to drink during the day. I even fill up my girls' hot pink CamelBaks with ice and water so they feel like they're training with me. Most of all, hydrate as if your life depends on it. It does!



The GREAT Mer

We were well into our 15-month deployment in support of Operation Iraqi Freedom 06-08. During the first half of the rotation, our ground brethren and gun pilots of the 1st Cavalry Division were constantly duking it out with the enemy. Our Soldiers were fatigued, the fleet of AH-64Ds was showing signs of wear and the missions became routine for the aircrews. Troops in contact, reconnaissance, forward operating base security and medevac rescue were part of everyday life, and the aircrews were getting comfortable with these missions. Dare I say complacent?

Fast-forward a couple of months and I'm on the schedule for a "good deal" — a day reconnaissance mission in our area of operations. The shooting slowed quite a bit since the surge ended and we hadn't gotten many direct support missions. Today was no different, and the mission set looked familiar: fly for four or five hours and look for work.

I had been on the day shift for a couple of months and this day started just like the one before. Early wake up, followed by the intelligence, operations and weather briefings, and then off to chow for some much-needed breakfast and "lifer's juice" (coffee).

As we walked from the chow hall to the flightline, the conversation was about everything except our

upcoming task. We checked in with the crew chiefs for aircraft assignments, scrubbed the logbooks, grabbed our gear and then stepped to the birds. Normally, I would take the opportunity on those long walks to the aircraft to talk with my co-pilot/gunner (CPG) about things like actions on contact or conducting the crew brief; but we had no "real" mission. What's the point, right? Besides, the staff captain I was flying with used to be my battle-roster crewmember when he was a platoon leader, and we had done this many times before. "Easy like Sunday morning," I thought. Add "failure to adhere to standards" to the list!

Preflight, run up, taxi out and line up all went normal. We knocked out our bore sights and soon were

airborne, looking for work. Two long hours went by and we were unable to pimp ourselves out to the ground guys. No units out kicking in doors, no joint terminal attack controller to play with, not even a counter improvised explosive device patrol was out looking for gunship support. It was so boring we even cut tactical chatter and started bantering about what was the worst song ever written.

Finally, we reached our bingo numbers and hit the forward arming and refueling point (FARP) for a splash of gas and, hopefully, some leftover cheeseburgers from 3/5 platoon's lunch truck. As we waited for the fuel nozzles, I radioed my wingman and jokingly said, "Maybe we'll get shot up today so we can get done early." See where this is going?

“MANY times in Army **AVIATION**, the **RESULTS** are **TRAGIC** when **COMPLACENCY**, failure to **ADHERE** to published **STANDARDS** and lack of **DISCIPLINE** enter our world. **”**

1ACE

CHIEF WARRANT OFFICER 3 RUSSELL D. NOTES
C Co., 2nd Battalion, 151st Aviation Regiment
Georgia Army National Guard



Add “breakdown of discipline and bad karma” to the list.

We launched out of the FARP with no updates on the enemy situation and headed out to the west for route reconnaissance. Complacency, “the Great Menace,” was having its way, so I took the same route of flight as most Apaches going out to this area. As I crossed over the route, I felt and heard a couple of thumps against my aircraft. Not realizing I was getting ready to have a significant emotional event, I told my CPG we might have had a bird strike.

Seconds later, we experienced the thumps again. Reality quickly set in as the bullets entered the CPG station and the smell of cordite filled the air. One of the bullets became lodged in the blast shield that separates our two crew stations! How the captain up front walked away with virtually no injuries is truly a miracle. Fortunately, I knew the area was bad guy territory, so I

was carrying plenty of airspeed to maneuver away from the aerial ambush as my wingman suppressed the area with 30 mm.

Multiple cautions and warnings appeared on the upfront display and “Betty” sure was good about reminding me of my lack of attention. Thankfully, Boeing builds a great product and I was able to recover the aircraft with my hurt pride and plenty of battle damage from the 12.7 mm and 7.62 mm rounds. If only I had flown this mission like it was my first!

Lessons Learned

As an instructor pilot on my second combat tour, I got lulled into the very thing that I warned new aviators. I allowed overconfidence, boredom and the routine “same o’, same o’” to take me away from the professional standards I was taught. My CPG and I were lucky that day. We were even luckier to have such a

capable wingman! What began as a ho-hum reconnaissance mission ended with a chain of preventable human errors. Many times in Army aviation, the results are tragic when complacency, failure to adhere to published standards and lack of discipline enter our world. Too many people have crashed Army aircraft in combat and in training when one or all of these factors were present. As Leaders, we need to get involved in combating these distracters. A couple of simple control measures including limiting time on one shift and changing the crew mix, will help deter aviators from getting complacent. As a student in the Aviation Safety Officer Course and having seen some of the accident videos, I see an even greater need to fight the Great Menace.◀

TSAS



Workload Reduction via the Sense of Touch

JOHN RANICIC, DR. ART ESTRADA AND DR. ANGUS RUPERT
U.S. Army Aeromedical Research Laboratory
Fort Rucker, Ala.

A recent accident illustrates that no aviation community is safe from spatial disorientation (SD) accidents. Unfortunately, many top-shelf pilots have fallen victim to this loss of reference, and statistics suggest more mishaps will occur in the future.



In today's Army aviation community, there is an added emphasis on night flying, all-weather capability and low-altitude missions, which are all scenarios that increase SD. Aviation SD mishaps increase dramatically in times of conflict. The sharp spike in SD mishaps during Operation Desert Storm recurred with the onset of wars in Iraq and Afghanistan. These theaters of engagement are associated with conditions of degraded visual environments (DVE), primarily brownout. However, SD is also a leading cause of noncombat aircrew fatalities. The costs of SD mishaps include mission failure, the impairment of mission effectiveness, the monetary

value of aircraft/equipment lost and fatalities and disabilities.

Pilot workload is a factor closely associated with SD under conditions of DVE. In contrast with the older training and legacy aircraft, new helicopters and updated legacy aircraft possess many more sensors to provide pilots with the necessary information to land under DVE conditions. The problem is, all this information is shown on multifunction displays to an already overloaded pilot. As many pilots have noted, there is often simply too much information to assimilate under the highly dynamic conditions of DVE. Many aircraft manufacturers and research groups are actively developing visual displays to

present that information in a format that can be used by pilots.

Unless the pilot is provided sufficient flight parameter information intuitively, the only solution would be to remove the pilot from the loop and use automated procedures to land under brownout or other DVE conditions.

The U.S. Army Aeromedical Research Laboratory (USAARL) is developing the Tactile Situational Awareness System (TSAS) to use the sense of touch to provide spatial orientation and situational awareness information to the pilot. The system consists of a matrix of tactile stimulators (tactors) embedded into a lightweight cooling garment that maintains the tactors in



close proximity to the torso.

Using data from existing aircraft sensors or a custom self-contained sensor package for non-bus aircraft, TSAS obtains the aircraft position, velocity, attitude, altitude and threat information. Similar to pages of a multifunction display, TSAS has the following modes for displaying critical information during various phases of flight:

- In the hover mode, TSAS provides horizontal drift velocity and vertical altitude information.
- In the forward flight mode, TSAS provides attitude and altitude cueing. It can also provide navigational cueing in conjunction with existing navigation displays.
- In the approach mode, TSAS provides glide slope and course information, as well as airspeed deceleration information.
- In the threat mode, TSAS

provides the threat direction and general distance to the pilot without the pilot actually having "eyes-on" information. As the pilot turns and maneuvers the aircraft, the tactors continuously provide threat relative position and distance information. This mode of operation permits the pilot to fly with eyes outside the aircraft in a hostile environment.

The TSAS has been flight tested in the UH-60A, MH-53M and Canadian Bell 205 aircraft, as well as CV-22, MH-47, MH-53M and MH-60K simulators. Pilots participating in the simulator and in-flight testing agree that TSAS reduces pilot workload and increases flight safety by decreasing instrument scanning requirements during degraded visual conditions. Both qualitative and subjective data demonstrate that hover performance improved with the use of TSAS.

The TSAS is intuitive and quick for pilots to learn. Within 10 minutes, pilots could hover without the aid of visual instruments.


A USAARL scientist recently conducted a study demonstrating that fatigued pilots perform considerably better when TSAS is available to provide orientation cues. Since fatigue is a contributing factor in many SD-related mishaps, TSAS may provide a countermeasure to reduce mishaps.

With the widespread use of night vision goggles, Army aviation can justifiably claim to "own the night." New technologies such as TSAS, in conjunction with recently developed sensors, will help provide Army pilots with the ability to fly safely under conditions of DVE. ◀

hit the road

JENNIFER NICKERSON
U.S. Army Aviation and Missile Command
Redstone Arsenal, Ala.

While traveling the nation's highways, how often do we see pieces of tire and tread belts along the sides of the road? I see them nearly every trip I take. Almost all of this litter is caused by blowouts and tread separation. So how do we keep our tires from becoming part of this road debris? The answer is vehicle tire maintenance.



Most of us never even think about tire maintenance. Our minds are full of other things such as planning our route, packing the car and making sure the tank is full of gas. Failure to maintain a vehicle's tires, however, could bring a quick end to a family road trip.

The most important part of vehicle tire maintenance is having the tires inflated to the recommended pressure. That pressure is shown on a tire's sidewalls and can also be found on a placard located on the driver-side door jamb.

To check the air pressure, always use an accurate tire pressure gauge and check the tires when they're cold. If you check the pressure after driving, the tires will be hot and the gauge will register higher than the actual pressure. This false reading could cause problems later.

As tires wear, patterns develop, and these wear patterns can indicate several problems. The main two types of wear patterns are caused by tires being either underinflated or overinflated. An underinflated tire will develop excessive wear on the edges of the tread. An underinflated tire can flex more than a properly inflated tire. This flexing builds up heat, which can ruin the tire and lead to sidewall cracks. Underinflation can also reduce fuel economy through increased rolling

resistance, which makes your vehicle's engine work harder.

Overinflation causes the tire to wear in the middle of the tread. In this case, the middle of the tire takes all the weight, which accelerates the wear. This uneven wear reduces the useful life of the tire.

Another important step in proper tire maintenance is to check for tread depth or boldness. There are two ways to check for tread depth. One method is the penny test. Simply insert a penny into the tread with the date facing you. If you can see the date, it's time to replace the tire.

The majority of tire troubles occur when there is less than 10 percent of the tread depth remaining. Remember, when it comes to tires, bald is never beautiful. Mechanics check tread depth with a tire wear indicator, which can be purchased at many auto parts stores.

Weather is another issue that usually doesn't come to mind when checking tires, but it can play a part in tire maintenance. Tires on vehicles that sit parked on hard surfaces or stand in the

hot sun for weeks or months can be damaged from lack of use. This damage is caused by ozone and heat and shows up as cracks in the sidewall that weaken the tire.

Bulges and abrasions should also be checked as part of a good tire maintenance routine. A bulge check depends on the type of tire you are using. A certain amount of bulge is normal with radial tires. However, if you notice a bulge on a bias tire, replace it. Any bulge on these tires makes them unserviceable.

On a radial tire, some bulges are not defects. These bulges are the result of how the tires are made. Different manufacturing techniques cause different types of bulges. The best thing to do is ask your tire company if the bulge is dangerous or not. However, any abrasion that goes all the way through the rubber to the cords should end the life of that tire. This type of damage is too risky to leave to chance.

Before you hit the road, take the time to check your vehicle's tires. A good tire inspection means a safe and happy trip.◀

“ FAILURE to MAINTAIN a vehicle's TIRES, however, could BRING a quick END to a FAMILY road TRIP. ”



TIRED AND TRUE

ED CARTWRIGHT
583rd Sustainment Brigade
Camp Arifjan, Kuwait

As darkness falls on the forward operating base (FOB), Soldiers make the final checks of their weapons and equipment. The Stryker — a hulking, eight-wheeled, armored behemoth — rumbles to life and the call to mount up is made. Two air guards turn out the light and, with weapons loaded and at the ready, pop out of the hatch. The Strykers lumber forward, weaving through the FOB's barricaded entrance before disappearing into the darkness of uncertainty. Tonight, these Soldiers will be facing a new enemy — fatigue.

»» **FYI**

Sleep deprivation may lead to Soldiers falling asleep at the wheel, failing to recognize a threat or reacting too slowly; impaired thinking and reasoning abilities, leading to bad decisions; and an overall degradation in alertness and ability to function properly. The following tips can aid with sleep management:

- Maintain a nutritious diet and try to avoid too much caffeine, sugar and tobacco.
- Do not eat or drink too much before bedtime.

- Exercise regularly — but not within three hours before bedtime.
- Avoid activities that are mentally or physically stimulating before sleeping.
- Avoid over-the-counter “sleep aids,” which can cause grogginess, not actual sleep.
- When sleeping, minimize noise and light by wearing earplugs and blackout shades.
- Maintain a disciplined work/rest cycle.

Fatigue is the state of feeling tired, weary or sleepy that results from extended periods of mental or physical work, prolonged periods of anxiety, exposure to harsh environments or loss of adequate sleep. Unfortunately, all are common to Soldiers, so they must be aware of the effects of fatigue on their bodies and find ways to prevent it.

Perhaps the easiest way to combat the effects of fatigue is getting the proper amount of sleep. However, with obscured frontlines, unpredictable violence and increased patrols, Soldiers are finding adequate sleep a rare commodity. Without proper rest, Soldiers could have difficulty making good decisions. A recent event in theater connected to inadequate sleep was an M1151 HMMWV rollover that occurred while returning from combat logistics patrol. Fortunately, there were no fatalities.

Fatigue is a subject that is not truly appreciated in the professional military education arena. While fatigue adversely affects some Soldiers faster than others, it will affect most

over time. The dilemma is commanders have had no way to objectively assess how much sleep they and their Soldiers require.

Most sleep experts agree people need six to eight hours of continuous sleep. The Army Safety Program, governed by Army Regulation 385-10, states that Leaders will ensure vehicle operators are provided with at least eight continuous hours of rest during any 24-hour period. Leaders must develop policies that integrate proper rest cycles into the planning and execution of each mission. Furthermore, supervision is essential to ensure Soldiers are suitably rested.

There are individual controls Soldiers can implement to lessen the consequences of fatigue. Before attempting sleep, they should avoid engaging in activities that will stimulate the mind such as television and video games. Caffeinated drinks, especially energy drinks, should also be avoided. Soldiers should attempt to practice habits that will relax the body in preparation for sleep.

Sleep helps to maintain situational awareness. By no means is this to say Soldiers cannot fight when deprived of sleep. They can, but their combat effectiveness may be decreased. Because of mission requirements, there will be situations in an operational environment where adequate sleep is not possible. However, Leaders must remember that Soldiers are like equipment. They require a certain amount of preventive maintenance or they, too, will degrade in performance.◀

READY FOR THE RISK?

GRAT

GROUND RISK ASSESSMENT TOOL

<https://safety.army.mil>

The Ground Risk Assessment Tool is designed to aid in mitigating risk by reinforcing the five-step composite risk management process.



GRAT-S

<http://safety.army.smil.mil>

GRAT-S is now available and allows Leaders in forward-deployed units access to GRAT on the SIPRNET.





GOOD JUDGMENT WILL

Many of the recent, mostly fatal accident causes in emergency medical services (EMS), corporate and private helicopter arenas remain controlled flight into terrain (CFIT) and inadvertent flight into instrument meteorological conditions (IIMC). After flying helicopters for nearly 38 years, I'd like to share what has worked well for me and for those in police aviation, as well as illustrate how these accidents can be averted with some basic disciplines.

I fly with high- and low-time pilots, mostly in helicopters such as the Bell 430, EC-135 and OH-58C. However, regardless of flying in an instrument flight rules (IFR) Bell 430 or a helicopter such as a Robinson R22/R44, pilots need to remember to follow basic disciplines and use good judgment to prevent accidents. To prevent future accidents, I urge all helicopter pilots to review their basic disciplines and embed those tactics, techniques and

procedures into their mindset, thinking about them before and during every flight.

When I discuss CFIT with new rotary- and fixed-wing pilots, I am surprised that many consider this to mean flying a helicopter or airplane into a mountain. Nothing could be further from the truth.

New and experienced pilots must remember that CFIT occurs in other situations. These include flying into rising or flat terrain and where the pilot

is unaware of a descent and contacts the ground, resulting in a crash. I'm also pairing CFIT with obstructions — while in controlled flight, the pilot is unaware of the height of obstructions and flying too low.

New and experienced pilots must also understand that hours do not make a good or safe pilot; good judgment makes a safe pilot. Judgment in preflight, judgment in knowing your limitations and flying within them, judgment to know the

MENT

KEEP YOU ALIVE



CMDR. DAN BITTON
Multi-jurisdictional Law Enforcement Aviation Coalition
Winthrop Harbor, Ill.

height of obstacles in your flight path, judgment to not continue a flight in deteriorating weather and judgment to trust your instincts and warning signs are just some of the judgment issues that make for a truly safe pilot.

Mindset is the core of implementing good judgment. As rotary-wing pilots, we have an advantage that fixed-wing pilots do not have — the ability to land vertically almost anywhere. Using that advantage properly can prevent an accident and save your life.

First, if you are a visual flight rules (VFR) pilot, do not depart in marginal VFR weather, as it can become IFR very quickly. The weather you receive from the automatic terminal information service or automated surface observing system is only for a very specific point on the airport;

it might be worse 100 feet or two miles away. Accidents often begin with a common-error chain of events, such as departing in marginal conditions. Never be so committed to a planned flight that you refuse to alter it when the weather changes.

If you encounter diminishing weather conditions, land immediately or as soon as possible. A park, parking lot, golf course or open fields are useful. When the fire department and police come, tell them you conducted a precautionary landing due to weather. When you call the local Federal Aviation Administration (FAA) office, they're going to say, "Good job ... no one injured ... no damage ... no issues." Wait for the weather to become VFR and fly home. It is that easy. It takes good judgment and discipline to make that landing rather than trying to

continue to the airport closest to your intended destination. Trying to continue with diminishing ceiling and visibility has caused many fatal accidents.

I have made several precautionary landings. Flying police and commercial helicopters near Lake Michigan with its "lake effect" makes for unpredictable weather that can quickly turn into fog. I once landed in a school parking lot and, after the weather cleared and having called the airport just 10 miles away to verify they were also VFR, I had to make another off-airport landing as the weather again fogged in around me. It is better to land than to chance going ILMC.

Should you need to make an off-airport landing, be extremely cautious and ensure no obstacles such as poles, wires, trees, low-level brush and buildings are in

your landing path. The best way to handle these obstacles is to remember slow is good and slower is better. An EMS type of approach, steep and slow, is my first choice — and when I say slow, I mean really slow. You might not agree with this, as you may find yourself within the height-velocity curve. My personal feelings are that during off-airport landings, the chances of striking an obstacle are greater than the chances of an engine failure. Going slow gives me the ability to see what I am flying into so I can abort or alter the landing if necessary.

When flying in reduced visibility, we're often told to do a 180-degree turn and return to better weather. This is a double-edged sword that I consider an especially dangerous situation. Radar tracks from many accidents clearly show the last radar return before the crash was during a turn. In a turn, pilots can suffer the physiological aspects of spatial disorientation (SD) and lose situational awareness. I would rather a pilot land as soon as possible from a straight flight path than attempt a turn in reduced visibility. I choose to learn from those killer accidents. Accidents while turning can happen to new pilots or pilots who have thousands of hours of experience and are IFR-rated and current in VFR and IFR helicopters.

As for newer IFR pilots, do not let that rating give you a false sense of security. I fly hard or solid IFR all the time and it is a handful; but, then again, I don't fly outside my abilities. Having the IFR rating, flying with goggles or under the hood is not the same as flying in real clouds solely on instruments. I see this firsthand when I train pilots flying under a hood over Lake Michigan and things go bad quickly because they can no longer see the ground through the windows or chin

bubble. However, IFR pilots should practice these techniques and, I believe, VFR pilots should receive some basic training in inadvertent flight into IFR conditions.

Loss of situational awareness occurs to the most experienced pilots, too, and I urge those of you who fit this category to practice good judgment during flights into marginal weather. At

NEW and EXPERIENCED pilots must also UNDERSTAND that HOURS do NOT make a GOOD or SAFE pilot; good JUDGMENT MAKES a safe PILOT.

some point, any pilot — young or old — will encounter SD. My recommendation is to pull pitch and fly straight. Again, no turns unless obstacles or rising terrain require one. Trust your instruments, declare an emergency and ask air traffic control (ATC) for help.

During years gone by, ATC offered no-gyro and radar surveillance approaches. These are not as common now; however, by declaring an emergency, ATC can tell you if you are turning, climbing or descending and help you get back to VFR weather or vector you toward a runway. Pilots sometimes fear they'll lose their license or be reprimanded by the FAA if they declare an emergency. Nonetheless, the term was created as a method for you, the pilot, to obtain preferential treatment. You are required to submit a letter explaining why you declared an emergency, but that does not mean you will be disciplined or expected to take the dreaded recheck or proficiency ride. If the weather ahead has diminished

and the weather behind appears bad, that is beyond your control. From my discussions with many FAA inspectors, these instances do not lead to disciplinary actions. On the contrary, pilots are typically commended for using the system and averting an accident.

As for obstacles, know the height of the tallest obstacle in the area where you will be flying and keep a respectable distance (500 feet) above and away from it. Day and night are very different environments, and I fly higher at night than during the day — typically 1,200 to 1,500 feet above ground level (AGL). Helicopter pilots tend to fly lower. I would say most fly at 500 feet AGL.

You should remember that altitude offers safety not only when it comes to avoiding obstacles (including terrain), but also during engine failures. In real-world flying, if you have an engine failure, the time from failure to contact with the ground at 200 feet is three to five seconds; from 500 feet, 15 to 20 seconds; and from 1,000 feet, about 35 to 40 seconds. Several





videos showing real-time engine-failure accidents can attest to these times.

In summary, do not depart into marginal weather if you find yourself in deteriorating visibility or ceiling. Instead, land immediately — preferably straight ahead into the first open area you see, with caution as described above. Know the obstacles in your flight path and fly higher rather than lower. At the very least, fly higher at night. Remind yourself that good judgment will keep you alive and trust your instincts. When you are thinking, “This weather is getting bad,” or you find yourself flying at 40 knots 200 feet above a road, you should have already landed, so don’t delay.

None of the pilots or passengers killed during CFIT or IIMC took off thinking they were going to die. In almost every case, had the pilots not continued the flight but, rather, landed immediately, they would still be with us today.

Helicopter flight is a terrific experience, one that is especially safe and rewarding if conducted within the capabilities of the helicopter and the pilot. Use these disciplines I have suggested and, hopefully, you also will have 30-plus years of flying helicopters and all the wonderful memories and great experiences that go with that. Fly safe. <<

Get the tools and information
necessary to be an engaged Leader

Leader's
CORNER

<https://safety.army.mil>

Keep your Soldiers safe
on and off duty. Log on TODAY!



IF YOU DIDN'T DROP IT ...

HOWARD ALLMAN
U.S. Army Technical Center for Explosives Safety
McAlester, Okla.

When munitions fail to function as intended, they become unexploded ordnance (UXO). You might expect to find UXO only on impact ranges and in combat areas, but that's not always the case.

Military and foreign munitions come in a variety of types, sizes and shapes and might not be easy to recognize. However, items that are easily identified as military ordnance have found their way into homes as souvenirs or war trophies. Some unsuspecting collectors have even discovered that "inert" grenade they've been using for years as a paperweight is actually live.

Military explosives ordnance disposal (EOD) personnel routinely get calls to take care of UXO. Sometimes, these items are found in unlikely locations, including:

- Three 155 mm rounds (one live, two inert) and a 16-inch naval

gun round were discovered at a metal recycling facility. The live 155 mm round was detonated by an EOD unit. The status of the 16-inch round was not reported.

- A 3-inch illumination projectile was found at a construction site.

- While cleaning a shed, the shed's owner found a 2½-inch rocket, a 60 mm illumination mortar round with fuze and an M9 aircraft parachute flare.

- A large quantity of crystallized civilian dynamite was found at a residence.

- A Civil War buff was killed when one of the cannon balls he collected exploded.

- While cleaning out a

conex box, an M82 grenade was discovered.

Give some thought to that ordnance item that's sitting on your desk as a souvenir or conversation piece. If you really want to keep it, make sure you know its history and follow Department of the Army Pamphlet 385-64, chapter 13-6, for guidance on how inert ammunition should be properly marked, identified and inspected. You can't be too careful. Even museums have had items they've displayed for years turn out to be live when properly inspected.

If you encounter anything resembling ammunition or ammunition components, follow

the three R's of explosive safety:

- **Recognize.** Be on the safe side. If you think the item might be a piece of UXO, consider it one. Do not touch or move it.
- **Retreat.** Get away from the item and tell others to keep away. If you can, mark the area without getting too close. That will help the EOD team find it later.

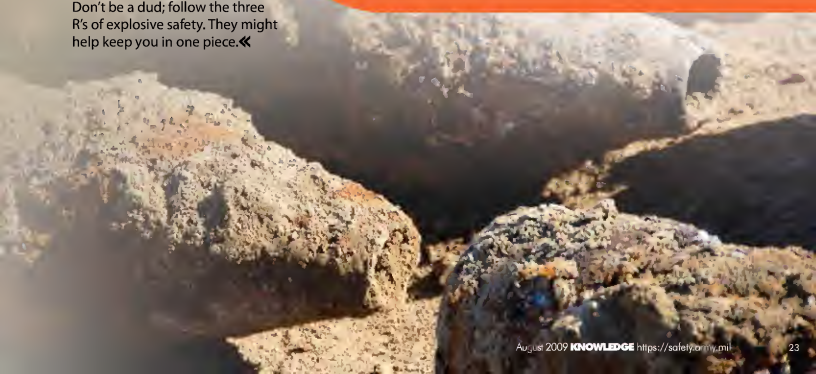
- **Report.** Contact the nearest security, law enforcement or EOD unit. Provide them as much information as you can about what you saw and where it is located. Be sure to let removal personnel know how to contact you in case they need help in locating the item.

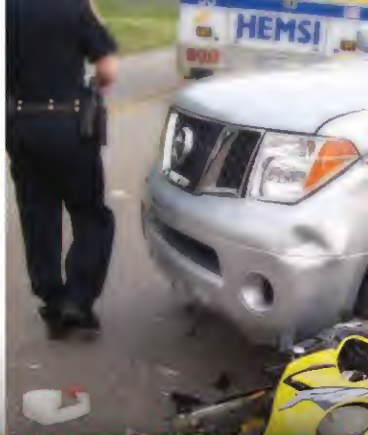
Remember, if you didn't drop it, don't pick it up. Not every bomb looks like a bomb. Even UXO fragments can explode and should not be touched or moved.

The Defense Environmental Network and Information Exchange has a Web site that provides information and educational materials on UXO to help you stay safe. Visit it at <https://www.denix.osd.mil/portal/page/portal/denix/environment/uxo>. Don't be a dud; follow the three R's of explosive safety. They might help keep you in one piece.◀




Unexploded ordnance is defined in Army Regulation 385-10 as: Ammunition and explosives that have been primed, fused, armed or otherwise prepared for action and that have been fired, dropped, launched, projected or placed in such a manner as to constitute a hazard to operations, installations, personnel or materiel, and remain unexploded by malfunction, by design or for other causes.




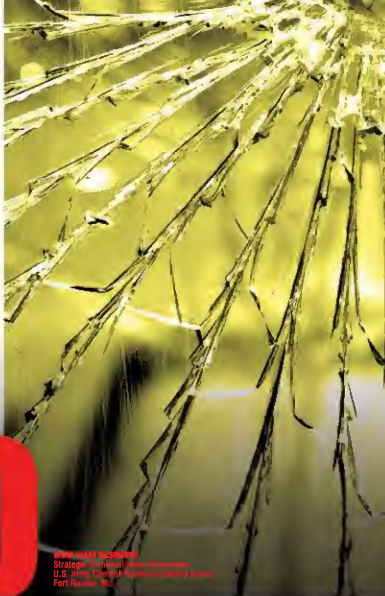


NOWHERE



Staff Sgt. Brian Gebhart tried to lift his head as he sat on the vehicle's hood, leaning back against the windshield. The double flip he'd just done in the air above the vehicle would have earned him high marks in Olympic gymnastics. However, this wasn't a competition; it was a collision. Gebhart's 370-pound Honda CBR600 motorcycle and a 4,500-pound Nissan Pathfinder tried to occupy the same place at the same time. Physics says you can't do that.





TO GO

RED HART REDSTONE
Strategic Training Area (STRA)
U.S. Army Combat Readiness Safety Center
Fort Redstone, Ala.

But that isn't how he planned to end his ride home from his unit at Redstone Arsenal, Ala., that beautiful Friday afternoon. Gebhart was assigned to the 59th Ordnance Brigade as an instructor on the Avenger Low-Level Air Defense System and also assigned to the 832nd Ordnance Battalion as a squad leader. As he got ready to leave, he added his modular-style helmet, gloves and reflective physical training belt to his Army Combat Uniform and boots. He then climbed onto his bike and waved to his first sergeant and two other cadre members as he pulled out of the parking lot. He

was looking forward to getting home to his wife, who was pregnant with their first child.

The route home took him out Redstone's Gate 7 and down to the intersection of Zierdt Road, which ran north and south alongside the post. Despite the road offering only a single lane in each direction, drivers were known for moving quickly. Gebhart got to the intersection, waited for the light to turn green and then turned left to head south on Zierdt Road. But he didn't get very far.

Less than a mile away, a driver was itching to get her vehicle onto the northbound lane of

Zierdt Road. Pulling out of a subdivision on the west (right) side of the road, she edged her Pathfinder to the edge of the road and looked for a break in traffic so she could pull across the road and turn left into the northbound lane. She looked to the left — in the direction Gebhart was coming — but later claimed she didn't see him. Zierdt Road comes up a rise that hides approaching southbound traffic from the view of drivers at the entrance of the subdivision until they were only about 100 yards away. The woman pulled forward perhaps four feet into the road and then spotted

a car quickly approaching from the right. Deciding to wait until the car passed, she stopped, blocking most of the southbound lane and leaving Gebhart — approaching from the left — nowhere to go. With the Pathfinder blocking most of the southbound lane and

Pathfinder's left-front fender.

"When I hit, I felt myself lifting off the bike and then went straight into the windshield," he said. "When I hit the windshield, I felt my body crumple up. I went into the air and felt myself do a couple of flips. When I landed on the windshield, I thought

operator to request assistance, but to her husband to explain she'd been in an accident. Gebhart couldn't believe his ears and yelled out at her as the pain and frustration started to set in.

The pain rapidly grew worse. Gebhart had been thrown forward during the collision, his pelvic region striking the rear of the fuel tank hard enough to severely dent it. He was rocking back and forth in pain when a man stopped and called 911 on his cell phone. Gebhart gave the man his home phone number and asked him to call his wife to let her know he was all right. Fortunately, an off-duty nurse stopped to assist him. Gebhart wanted to climb off the hood and walk around to ease the pain, but the nurse stopped him. When he tried to raise his head to see if his wife was coming, the nurse told him, "Don't move your head ... don't move your head!"

Help soon arrived in response to the 911 call. Emergency medical services personnel cut off his book bag, removed his helmet and then placed him on a backboard. They then lifted him off the Pathfinder's hood and placed him in an ambulance and drove him to

“ But **HE COULDN'T STOP** in **TIME** and **SLAMMED** into the Pathfinder's **LEFT-FRONT FENDER.** ”

the possibility of fast-moving traffic in the oncoming lane, his options weren't good.

"My whole mindset at that time was 'stop!'" he said. In the process, he panicked, jamming down with his right foot on the rear brake and locking up the wheel. The Honda began fishtailing, so he got off the rear brake and then applied both brakes. But he couldn't stop in time and slammed into the

it was a pretty soft landing."

The Pathfinder's windshield was caved in from the impact. Gebhart now sat upright on the hood, his back leaning against the windshield.

"For a brief second, I took a breath and it was just like, 'Wow, I made it through it!'" he said.

As he lay against the windshield, he heard the driver make a call on her cell phone. Amazingly, it was not to the 911

a local hospital for treatment.

When he arrived at the emergency room, the doctors cut off the rest of his clothing and gave him pain medication. For the next four hours, Gebhart underwent X-rays and CAT scans. Fortunately, he hadn't crushed his pelvis, as was initially thought, and he was released to go home. He was given three days' quarters and then went to sick call, where he was given an additional three days' quarters. He came to work for a couple of days, but had to go on quarters again.

Ultimately, the accident took Gebhart away from his job for nine days and caused him to be restricted from physical training from May until November 2008. Fortunately, however, the accident didn't take his life. He could not predict the events that happened that day on the road, but he could protect himself against the unpredictable. He had the choice all riders face as they prepare to ride — "Will I dress for the ride or the possible crash?"

And he made the choice that saved his life. His modular helmet hadn't been cheap, but cheap wasn't part of the equation when he began riding. There are some things you can skimp on, but not safety.

"My bike is totaled, but that's something I can replace," he said. "If it wasn't for my helmet, I definitely would be in a lot worse shape."

His wife, Kaila, echoed those sentiments.

"I was so relieved that he made it through this accident," she said. "I can't even begin to imagine what it would have been like to lose him and be left alone to raise our child. I am glad he is still here to come home each night."◀



KEEP THE LINE

KARL ANDERSON
Headquarters, U.S. Army Corps of Engineers
Safety and Occupational Health Office
Washington, D.C.





WIRES IN MIND

Overhead power lines are so common that we practically don't see them when we look down a road or walk around a building. Birds sit on them and pairs of shoes hang from them — with no sparks, fire or other signs of dangerous energy. But contacting power lines is one of the most common causes of Army electrical accidents in both tactical operations and on base. It's probably because we see them all the time, without any fireworks, that we don't recognize the hazardous energy they contain.

I used to work roofing and painting houses. There always came a time when I had to work around the service entrance lines, the heavy cables bringing power into the house. At first, I avoided all contact with the wires, thanks to the local power company's school program and its cartoon light bulb that made me scared of them.

Of course, when you're working fast, there can come a time when you lose your caution. My hand would slip and I'd hit the wires with my arm. Nothing happened. Standing on a porch roof, I backed into the wires. Still, nothing happened.

Eventually, I came to think that these wires were pretty safe to touch, as long as they had that black insulation on them. I would push them, lean on them, lift them, no problem. I realize now the only thing protecting me was dumb

luck — seriously dumb luck.

Let me tell you what could have happened through this true description of an accident investigated during my Army safety career. A painter put a metal ladder against the side of a base command building to paint around the service entrance cables. The lines were normal distribution lines — just 110 volts on the hot side, like you'd see in most neighborhoods in the United States. They had a typical rubberized black sleeve on them, and it appeared to be in good shape. Where the overhead cables connected to the building wires, there were bolted connections covered with insulating putty. There was no metal visible.

It was a hot day, and the worker busily painted around the hangers holding the wire to the building. He then brushed paint in the tight area right under the hanger. Without

warning, there was a dull pop and the worker fell from the ladder. Twelve feet isn't much of a fall and the worker survived, but he lost his arm. The pop had been his arm basically exploding above his elbow.

During the site investigation, it was found that the insulating putty had been worn away from the edge on one of the bolt heads in the cable connection. The worker had accidentally touched this with the back of his hand during a brush stroke. Because of the hot weather, his skin was wet with sweat, allowing the power from the line to easily travel through his arm.

What saved his life — but cost him his arm — was that his bicep was touching the metal ladder as he stretched to reach across it. The



from them. If you don't have a choice, use a nonconducting object (fiberglass pole, plastic pipe, dry wooden broom handle) to move them out of your way. When you will be in an elevated position, especially the top of a moving vehicle, plan ahead for this hazard

up heat quickly and cause a fire. Imagine the size of the flash when a larger power line arcs.

Several Soldier accidents happened when metal objects were accidentally or intentionally put into circuit-panel boxes. The resulting arc flash is like a localized ball of lighting. It can cause burns, vaporize metals that the Soldier inhales and transmit enough power through the body to kill.

This brings up the second way you can be injured or killed by electricity; the current running through your body and interfering with your nerves and muscles. By touching wires or energized surfaces, you can become part of the circuit. It doesn't take much power either. At 10 to 15 milliamps (one-thousandth of an amp), your muscles can contract and you can't let go of an energized object. If you're exposed to that current for long, you can die, especially if the current is running through your heart. If the current runs through major nerves or the brain, it can cause serious permanent injuries or death.

To keep current out of your body, stay well away from exposed, uninsulated electrical conductors such as open panel boxes. Be aware that when you're wet, your skin is up to 10 times less resistant to current than when dry, so avoid all electrical equipment.

“About **ONE-FOURTH** of the **ARMY'S** serious **ELECTRICAL INJURIES** and **DEATHS** are caused by **CONTACT** with overhead **POWER LINES**.”

current jumped from his arm into the ladder and went to ground, but the heat caused by his body's resistance to the current inflicted an explosion-type exit wound. And no, he didn't stand there and shake, like in the movies. It all happened in one, maybe two seconds.

So what does this have to do with Soldier safety? About one-fourth of the Army's serious electrical injuries and deaths are caused by contact with overhead power lines. There is no completely safe way for a nonelectrician to handle these cables if they are energized. It's best to stay away

and keep an eye out for cables.

Electricity kills or injures in three main ways. The first is by arc flash. If you have been near an electrical welder while they are working, you know how much heat that bright light produces. A welder uses a very small arc to melt metal and weld it together.

On a small scale, if an electrical outlet is loose and won't hold a plug firmly, or if you don't push in the plug all the way, the loose connection can cause a very small arc that constantly jumps from the outlet to the metal blade of the plug. This can build

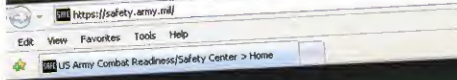
The most important measure to protect you from becoming a path for electricity is to make sure all power systems are grounded. Grounding means that there is a wire or other conductive pathway that the electricity can use instead of your body. Use a simple plug-in tester to see if your outlets are grounded. If they are not, stop using the outlets and notify the proper authorities immediately. Never use a three-prong (grounded) plug that has the grounding pin removed. Any equipment plugged into the cord can malfunction and you would not be protected.

The third way electricity kills is by causing internal damage and burns. When power runs through any conductor, the material has some resistance to the current. The resistance causes heat. If there is high current and high resistance, like there is in your body, the fast buildup of heat causes extreme damage that cannot heal. Many electrical shock victims who do survive lose whole organs or limbs due to internal burns.

As mentioned in the accident description earlier in this article, this heat buildup can be extremely fast — so fast the water in the muscles turns to steam, expanding and causing explosive wounds. Protection against these injuries is the same; don't contact energized conductors and make sure grounds are in place.

In many accident investigations, it looks like the hazard that led to the injuries or deaths should have been obvious to everyone involved. It doesn't help the victim or their teammates to see this after the accident. What we all need to do is practice good risk management and evaluate all the hazards of a task or operation — even the hazards we see every day.◀

LET US KNOW WHAT YOU THINK!



U.S. ARMY COMBAT READINESS/SAFETY CENTER


<https://safety.army.mil>

Your feedback is important to our ongoing mission to constantly improve the products and services offered by the USACR/Safety Center.

DON'T JUST CHECK THE BLOCK

PAULA ALLMAN
Strategic Communication Directorate
U.S. Army Combat Readiness/Safety Center
Fort Rucker, Ala.

The commander has just appointed you as the aviation mission briefer for all low-risk missions. What are your duties as a briefing officer? Certainly, your duties are more than just approving and signing a risk management worksheet (RMW) prepared by the crew. So, then, what exactly are your duties?



Let's start with the basics. Army Regulation (AR) 95-1, Flight Regulations, paragraph 2-14a(2), states that commanders will select briefing officers based on their experience, maturity, judgment and ability to effectively mitigate risk to the aircrew and designate them by name and in writing. Mission briefers are authorized to brief regardless of risk level. The briefing officer must be a qualified and current pilot in command (PC) in the mission profile as determined and designated by the commander.

What should the mission briefer consider as he evaluates the mission using the unit's RMW? The mission briefer should be evaluating, at a minimum, those key elements identified in AR 95-1, 2-14b (1)-(7). Unfortunately, the RMW is not a cure-all to the risk management solution. The mission briefer still must take into consideration all information concerning the mission, environment and crew, as well as all the hazards inherent in aviation operations.

Ideally, the mission briefer is an experienced aviator qualified and current in the mission profiles he is to brief. He should possess the ability to quickly assess and apply risk mitigation techniques for the aircrew to accomplish the mission safely. Once the briefing officer and crew have mitigated the risk to the lowest level, the appropriate approval authority authorizes

the mission in accordance with unit standing operating procedures and local policies.

Composite risk management (CRM) is not just about completing and signing the RMW. It is a five-step process that includes identifying hazards, assessing hazards to determine risks, developing controls and

There are many things that can go wrong. Mitigating risks to their lowest level is not only prudent, but also necessary when the situation and mission permit.

Where will your unit's next accident be? Will it occur on a very complex collective training event in which an operation order

“LOW-RISK MISSIONS
cannot be **TAKEN** for
GRANTED or **WRITTEN**
OFF as a **ROUTINE** event.”

making risk decisions, implementing controls and, finally, supervising to ensure the controls identified provided the desired results. After the RMW is signed, the mission briefer must backbrief the modified mission to the PC to ensure he understands what he is approved to do.

Most units do an adequate job of identifying and assessing mission risks (steps one and two). Unfortunately, the five-step risk management process normally ends when the RMW values fall within the mission briefer's authority and, regrettably, he signs the worksheet. After that, little is done on steps three through five of the risk management process to mitigate or eliminate risk.

Low-risk missions cannot be taken for granted or written off as a routine event.

has been published and rehearsals and rock drills have been completed? Or, will it occur on a routine low-risk aircrew training manual flight in the local area?

Mission briefers must not fall into the trap of just "checking the block" so a crew can conduct a low-risk training mission. We must identify and assess the risks on all missions and then make decisions at the appropriate level, implementing controls so the mission can be executed safely. Commanders must ensure their approved aviation mission briefing officers are trained to perform these duties and have a thorough understanding of CRM. ◀



COMPLACENCE

CAN HURT

JOSEPH E. RICHARDSON
70th Regional Readiness Command
Fort Lawton, Wash.

It's no secret that over the past few years there has been a drastic increase in the number of motorcycles on the road. Therefore, it should come as no surprise that motorcycle accidents are on the rise. I am now a part of both of those statistics.

After retiring from the Navy in 2005, I was hired as an executive assistant for the 70th Regional Readiness Command by the Army Reserve in Seattle. The new job was about 67 miles from my house, and, for the first month, I drove my vehicle to work. After dishing out about \$360 in ferry and fuel costs, I started looking for alternate modes of transportation.

Unfortunately, buses didn't run early enough to get me to work on time and nobody responded to my requests to carpool. While driving around one day, I decided to go into a motorcycle shop to check prices.

at about 40 mph (the posted speed limit), when somebody sped out of a gas station. The vehicle sideswiped me, sending me into one of the car's windows, which smashed on impact, and then to the asphalt.

I was wearing my helmet (which never hit the ground), a short-sleeve shirt, work slacks and dress shoes, so I wasn't protected very well from the ensuing road rash and glass shards entering my arms and legs. Once I healed, I decided fixing the moped wasn't worth it, so I bought a bigger bike and changed my route so I wouldn't have to ride around the curve where the accident occurred.

For my next venture, I purchased a 600cc motorcycle; but this time I was determined to do things right. I attended a Motorcycle Safety Foundation (MSF)-sponsored riding course and got my motorcycle endorsement on my license. I purchased a motorcycle jacket with padding in the back and around the elbows and over-the-ankle motorcycle boots. I also wore a reflective vest — absolute styling.

friends. Everything was going well until one fateful morning in September, just two weeks after being hired as a safety and occupational health specialist.

I was on my way to work and going to the ferry landing like I had every morning for the past couple of years. On this day, however, I had to travel down a different ferry lane than normal. As I checked my blind spot for an upcoming lane change, I inadvertently pulled my bike into a 7-inch-high concrete lane divider.

I was only traveling about 5 mph, so, instead of just going over the divider, the motorcycle bounced off, throwing me off the bike. The bike then fell on my leg, breaking my fibula. The new safety guy was now an accident victim.

As I write this, I'm still in the process of healing. However, I still plan to ride my motorcycle to work once I fully recover. For all you riders whose motorcycles are a daily necessity, I have a little advice. Don't let confidence become complacency because accidents can happen to even the safest of riders. Make sure you

NCY

Because I never had any desire to own a motorcycle, I decided to start small and found a 50cc moped that showed a top speed of 40 mph on the speedometer.

I thought this was the answer because I didn't need to go any faster than 40 mph on my route to work. I purchased the moped and started riding it to work, saving myself more than \$200 per month in transportation costs. Additionally, in Washington State, if the bike is 50cc or less, there is no requirement for a motorcycle endorsement on the driver's license. Because it was just a small moped, I also didn't feel the need for a motorcycle safety course.

It took about three months before my first mishap. I was on my way home from work, riding

“The vehicle **SIDESWIPED** me, **SENDING ME** into one of the **CAR'S WINDOWS**, which **SMASHED** on **IMPACT**, and **THEN** to the **ASPHALT.**”

The more I rode, the more confident I became in my abilities. I even went on a three-day, three-state bike ride with my

remain vigilant because others might not be. Finally, be safe and don't become an accident statistic like I did — twice. «

Accidents occurred between April 1-30, 2009

LOSS

AVIATION

CH-47D



CLASS C

■ Post-maintenance test flight inspection revealed both aircraft pylon work platforms broke at the latching points and separated from the aircraft. One rotor blade and right-engine exhaust tail cone sustained damage from debris.

OH-58D(R)



CLASS A

■ The crew experienced a spike in the engine and rotor RPM. They initiated FADEC-manual mode and

subsequently initiated autorotation. The aircraft landed hard and was destroyed.

TH-67A



CLASS B

■ The aircraft contacted the ground during power recovery and simulated engine failure (autorotation) training.

UH-60L



CLASS D

■ While in cruise flight, the pilot banked the aircraft right to avoid a flock of birds. The flock turned and

reversed course. The pilot made an immediate left bank to try to evade the flock. The aircraft struck about 20 birds. The pilot in command did a precautionary landing at a nearby airport and shut down the aircraft for inspection of damage. Maintenance found numerous bird strike smudges on the aircraft with damage to the 90-degree gearbox cover. They replaced the tail rotor gearbox fairing and the aircraft was released for flight. Late report.

UC-35A



CLASS E

■ At a takeoff speed of 100 knots and an altitude of 5 feet above ground level (AGL), the aircraft encountered a flock of eight to 10 birds that flew across the nose of the aircraft. The pilots heard two thumps and continued the departure into a closed traffic pattern for a precautionary landing. The crew remained in the air to reduce their landing weight and then landed at a nearby airbase. During postflight inspection, they found blood from a bird strike on the leading edge of the right wing, just outboard of the main landing gear. Airfield management did a sweep of the runway and found two dead birds. No damage was noted and the aircraft was authorized a one-time flight back to home station for further inspection.

UAS

RQ-5A



CLASS A

■ The air vehicle operator lost link with the unmanned aircraft (UA), resulting in a 75-foot descent to ground contact. The recovery chute did not deploy due to low altitude.

RQ-7A



CLASS B

■ Upon landing, the UA proceeded over the safety net, bypassing the landing cable and ultimately ended up in a ditch 250 feet beyond the end of the runway.

CLASS C

■ The recovery chute deployed shortly after launch and the UA contacted the ground.

GROUND

ACV



CLASS A

■ A civilian was killed when his pickup truck was struck by a Stryker that was crossing a road on an Army installation.

CLASS C

■ A Mine Resistant Ambush Protected (MRAP) vehicle was damaged when it was sideswiped by another MRAP vehicle at a control point.

Personnel Injury



CLASS A

■ A Soldier died after he was struck in the head with a .40-caliber round from a newly purchased handgun. The Soldier and his wife were handling the weapon after loading it when it discharged.

CLASS B

■ A Department of the Army civilian (DAC) suffered a permanent partial disability injury to his hand while cutting a steel bar on a band saw. The DAC's glove was caught by the wire brush wheel and his hand was pulled into the saw blade. He lost his right thumb as a result.

ARMY >> AVIATION LOSSES

Fiscal 2009
as of July 7, 2009

Class A Fatalities

| | |
|------------|-----|
| ATTACK | 1/1 |
| RECON | 7/4 |
| UTILITY | 5/2 |
| CARGO | 1/0 |
| TRAINING | 1/0 |
| FIXED-WING | 0/0 |
| UAS | 3/0 |

TOTAL 18/7

ARMY >> GROUND LOSSES

Fiscal 2009
as of July 7, 2009

Class A Fatalities

| | |
|--|-------|
| AMV | 14/13 |
| ACV | 12/4 |
| PERSONNEL INJURY <small>includes weapons-handling accidents</small> | 20/13 |
| FIRE/ EXPLOSIVE | 5/1 |
| PROPERTY DAMAGE | 2/0 |

TOTAL 53/31

DRIVING

POV



CLASS A

■ A Soldier was driving her privately owned vehicle (POV) when she lost control in a sharp curve, left the road and struck a tree. She was unbelted and suffered fatal injuries on impact.

■ A Soldier fell from a Jeep operated by his girlfriend and suffered a fatal head injury when he struck the pavement.

■ Four Soldiers were riding in a POV when the driver lost control and the vehicle overturned. One Soldier passenger was ejected and later died during surgery. Another Soldier was hospitalized for 17 days. Local authorities cited alcohol use by the civilian driver as a factor in this accident.

■ A Soldier was driving his POV when he collided head-on with another driver who crossed the center line and into his path of travel. The Soldier was transported for medical care, but died the following morning.

■ A National Guardsman was driving to his weekend duty location when his POV hydroplaned, struck a guard rail and overturned. The Soldier, who was wearing his seat belt, suffered fatal injuries.

CLASS B

■ A Soldier was driving his POV when it blew a tire, causing a multiple-vehicle accident. The Soldier was badly burned when his car caught fire.



ALWAYS W

CLASS C

■ A Soldier was struck from behind by a pickup as he slowed for a vehicle waiting to turn at an intersection. The Soldier was not seriously injured.

POM



CLASS A

■ A Soldier and his wife both died when a vehicle unexpectedly exited a convenience store and entered their motorcycle's path.

The Soldier was wearing his helmet, gloves and personal protective equipment (PPE).

■ A mobilized National Guardsman was operating his motorcycle on a single-lane road when he collided with a pickup truck that turned into his path. The Soldier, who was wearing his helmet and PPE, was fatally injured.

POV DRIVING LOSSES

Fiscal 2009

as of July 7, 2009

Class A/Fatalities

| | |
|------------|-------|
| CAR | 33/34 |
| SUV/JEEP | 12/12 |
| TRUCK | 9/9 |
| MOTORCYCLE | 22/20 |
| PEDESTRIAN | 6/6 |
| OTHER* | 3/3 |

*Includes: vans and ATVs



84

TOTAL DEATHS

Fiscal 2008: 96 3-year average: 89

WEAR YOUR BELT



■ A Soldier was operating a borrowed sportbike and changing lanes when he lost control, struck a guy wire and flipped the motorcycle. The Soldier, who was wearing his helmet and PPE, died en route to a local hospital.

■ A National Guardsman was riding his motorcycle at high speed when he struck a curb and tree and was fatally injured. The Soldier had attended Motorcycle Safety Foundation training, was licensed and was wearing his helmet.

Editor's note: Information published in the accident briefs section is based on preliminary loss reports submitted by units and is subject to change. For more information on selected accident briefs, e-mail safe.knowledge@conus.army.mil.

□ The Army lost 129 Soldiers in fiscal 2008 to POV accidents.

MAKE SURE YOU AND YOUR PASSENGERS BUCKLE UP!

ALSO, DON'T FORGET:

Plan for that road trip and complete a quick and easy **TRiPs** report.



AIM FOR SUMMER FUN!

This summer, when out shooting your privately owned weapon, remember to always:

- Keep the gun pointed in a safe direction.
- Keep your finger off the trigger until ready to shoot.
- Keep the gun unloaded until ready to use.
- Be sure of your target before firing. Know what is around and beyond it.

RANGE & WEAPONS SAFETY TOOLBOX

The toolbox provides a centralized collection of resources to help protect our Band of Brothers and Sisters.

CHECK IT OUT TODAY!

<https://safety.army.mil/rangeweaponsafety>



ARMY STRONG



U.S. ARMY
FOR THE
FUTURE
LEADERS
OF
TOMORROW

ARMY SAFE
IS
ARMY STRONG



ARMY STRONG
I BAND OF BROTHERS
& SISTERS

